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1.1 SECTION 7 CONSULTATION

The U.S. Army Corps of Engineers (USACE), the Sonoma County Water Agency (SCWA), and the Mendocino County Russian River Flood Control and Water Conservation Improvement District (MCRRFCD) are undertaking a Section 7 Consultation under the federal Endangered Species Act (ESA) with National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries, formerly National Marine Fisheries Service [NMFS]). This Section 7 Consultation will evaluate the effects of operations and maintenance activities on listed salmonid species and their habitats in the Russian River watershed in northern California. The action agencies involved include USACE, SCWA, and MCRRFCD.

USACE, SCWA, and MCRRFCD activities span the Russian River from Coyote Valley Dam and Warm Springs Dam to the Russian River Estuary (Estuary) and several tributaries. The Russian River watershed supports threatened coho salmon (*Oncorhynchus kisutch*), steelhead (*Oncorhynchus mykiss*), and Chinook salmon (*Oncorhynchus tshawytscha*). USACE, SCWA, and MCRRFCD operate and maintain facilities and conduct activities related to flood control, water diversion and storage, instream flow releases, estuary management, hydroelectric power generation, channel maintenance, and fish production. In addition, these agencies are participants in a number of institutional agreements related to fulfilling their respective responsibilities.

The ESA requires federal agencies such as USACE to consult with secretaries of the U.S. Department of Interior and/or Commerce to ensure that their actions are not likely to jeopardize the continued existence of listed species or adversely modify or destroy critical habitat. USACE determined that their activities in the Russian River watershed may affect listed anadromous fish managed by NOAA Fisheries. Accordingly, USACE, SCWA, MCRRFCD, and NOAA Fisheries have entered into a Memorandum of Understanding (MOU) that sets a framework for the consultation on project activities that may directly or indirectly affect coho salmon, steelhead, and Chinook salmon in the Russian River. The MOU acknowledges the involvement of other agencies, including the California Department of Fish and Game (CDFG), the State Water Resources Control Board (SWRCB), the North Coast Regional Water Quality Control Board (NCRWQCB), the State Coastal Conservancy, and the Mendocino County Inland Water and Power Commission (MCIWPC).

1.2 SCOPE OF THE BIOLOGICAL ASSESSMENT

As part of the Section 7 Consultation, USACE, SCWA, and MCRRFCD have prepared this biological assessment (BA) for NOAA Fisheries that describes the actions subject to consultation, including the facilities, operations, maintenance, and existing conservation actions undertaken by the action agencies (USACE, SCWA, and MCRRFCD). The BA

describes environmental baseline conditions, including information on hydrology, water quality, habitat conditions, and fish populations.

A major focus of the BA is the assessment of potential effects on listed fish species. The assessment considers potential effects from proposed new facilities. It also considers project operations and maintenance procedures for new and existing facilities. Project operations and maintenance evaluated in the BA and to be included in the biological opinion (BO) include the following:

- Flood Control Operations (Coyote Valley and Warm Springs dams);
- Hydroelectric Project Operations (Warm Springs Dam);
- Water Supply Operations at Coyote Valley and Warm Springs dams and operation of the diversion facilities (in and adjacent to the Russian River near Mirabel);
- Water Management (in Dry Creek and in the East Fork and mainstem Russian River);
- Estuary Management (at the mouth of the Russian River);
- Channel Maintenance (in the mainstem Russian River and tributaries);
- Restoration and Conservation Actions (throughout the watershed); and
- Fish Facility Operations (Coyote Valley Fish Facility [CVFF] at Coyote Valley Dam, and Don Clausen Fish Hatchery [DCFH] at Warm Springs Dam).

In addition to potential effects to listed fish species from project operations and maintenance, the BA must consider the effects of interrelated[1] and interdependent[2] activities. These are actions that depend on the project facilities for their operations. An example of an interrelated activity is sport harvest of hatchery-produced steelhead. Because the project produces hatchery steelhead for sportfishing, any effects to listed species from the harvesting activities targeting hatchery steelhead are related to the project. Anglers catching hatchery steelhead may, inadvertently, catch a wild steelhead. Although they are required to release the wild steelhead, the stress and potential mortality associated with the accidental capture are considered caused by the project activity.

The BA also considers potential cumulative effects from future nonfederal actions. Such actions are defined more narrowly under Section 7 Consultation than under the National Environmental Policy Act (NEPA), or under the California Environmental Quality Act (CEQA). Cumulative effects include the effects of state tribal, local, or private actions

[1] An interrelated activity is "an activity that is part of the proposed project and depends on the proposed action for its justification" (USFWS and NMFS 1998).
[2] An interdependent activity is defined as "an activity that has no independent utility apart from the action under consultation" (USFWS and NMFS 1998).

that are reasonably certain to occur in the action area considered in the BO. Future federal actions that are unrelated to the proposed action are not considered in this section (USFWS and NMFS 1998). Many actions that have the potential to affect listed fish species or their habitats require federal permit or funding. The scope of cumulative actions focuses on state or private actions that are underway or are reasonably certain to occur within the time frame addressed by the BO.

The ESA prohibits the unauthorized "take"[3] of listed species. Take as defined under ESA includes harm to an individual. Therefore, in evaluating potential effects of project operations and maintenance activities, this document will find a conclusion of "likely to adversely affect" if any individual fish could be harmed by the proposed action, even if the risk of an adverse effect to the overall population is low. Such a conclusion will mean that one or more individual listed fish might be harmed by the proposed action. Incidental "take" may be authorized by NOAA Fisheries through issuance of an incidental take statement. Incidental take is take of a listed species that occurs as a result of conducting otherwise lawful activities that do not specifically target listed species.

The proposed project would have both beneficial and adverse effects on listed salmonids. However, the proposed project includes many changes to operation and maintenance that were made with the express purpose of reducing or eliminating project effects that were found in the evaluation of baseline conditions. The proposed project represents a substantial improvement over current operations. The USACE, SCWA, and MCRRFCD will develop a monitoring activities that would further refine some of the project operations to provide greater benefit to listed species and verify effectiveness of the measure to avoid injury to listed species.

When USACE submits a final BA to NOAA Fisheries, formal consultation under the ESA will be initiated. NOAA Fisheries will then prepare a BO for the proposed project. The BO will contain an assessment of the effects of the project on the listed fish species. NOAA Fisheries will evaluate the potential effects of the proposed project relative to baseline conditions to determine whether the activities of the proposed project are likely to jeopardize the continued existence of the populations under consultation. Their conclusion and supporting analysis will be presented in the BO. As a part of the BO, NOAA Fisheries will issue an incidental "take" statement to the USACE to cover "take" associated with the performance of USACE, SCWA, and MCRRFCD activities included in the project description. USACE is responsible for seeing that USACE, SCWA, and MCRRFCD comply with the incidental take statement, including adhering to take limits, reasonable and prudent measures, and its other terms and conditions.

In concert with development of the BO by NOAA Fisheries, the proposed project would undergo environmental review under both NEPA and CEQA, with the USACE and SCWA serving as the lead agency for their respective authorities. Changes in facilities and operations would be evaluated to determine whether the proposed project might have

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[3] Take is defined as "to harass, harm, pursue, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

significant adverse impacts that should be mitigated, or whether an alternative action is more appropriate. Following environmental review, some elements of the proposed project would need additional state and federal permits before implementation could occur.

This BA presents the project description for activities undertaken by the USACE, SCWA, and MCRRFCD. It includes the ongoing operations and maintenance activities necessary for providing essential services to the communities in the Russian River watershed. It also includes a description of the new facilities and modifications to current operations and maintenance procedures that are being considered for implementation.

The proposed project analyzed in this BA includes both current water supply operations and potential future water supply operations that may be necessary to serve already-planned growth within the service area of SCWA's customers. As a basis for evaluating the potential impacts of future water supply operations, this BA assumes that SCWA will serve additional future water demands by constructing facilities and increasing diversions from the Russian River as contemplated by the Water Supply and Transmission System Project (WSTSP).[4]

Because of the California State Court of Appeal's decision on May 16, 2003, which upheld in part a challenge to the adequacy of the WSTSP Environmental Impact Report (EIR), SCWA must complete a supplemental environmental review of the program-level impacts of the WSTSP, and the SCWA Board of Directors must consider the analysis when determining whether to approve the WSTSP. Thus, although it is uncertain whether the WSTSP will be carried out as described in its original EIR, the inclusion of the proposed WSTSP in the present BA allows future impacts to the threatened salmonid species to be evaluated on more specific, defined assumptions than would otherwise be the case. The actual water supply facilities and diversions from the Russian River that the SCWA Board of Directors may approve in the future may differ from those contemplated in the WSTSP. Nevertheless, WSTSP provides a future model against which impacts to salmonids from future water supply development may be analyzed. Therefore, although approval of the WSTSP must be considered by the SCWA Board of Directors following completion of supplemental environmental review, a discussion of the WSTSP is included in this BA.

This BA provides a description of the environmental baseline associated with current project operations and with other activities that have affected habitat conditions in the Russian River, including agriculture, timber harvest, wastewater discharges, gravel mining, and urbanization. The BA includes proposed changes to operations and maintenance practices. A Draft BA was made available to the public on January 16, 2004, and presented to the Public Policy Facilitation Committee (PPFC) for agency and public review on February 6, 2004. After comments were received on the Draft BA, this Final BA was prepared and submitted to NOAA Fisheries. A proposed monitoring

[4] The WSTSP project is described in an EIR prepared by SCWA (SCWA 1998a). The full citation can be found in Section 8.1 of this draft BA and is available in SCWA's offices in Santa Rosa, CA.

program and an implementation plan for the new facilities will be developed jointly with NOAA Fisheries.

Section 1, *Introduction*, presents the structure of the consultation as defined by the MOU, the regulatory history of the listings pertaining to salmon and steelhead in the Russian River, and a summary of the institutional agreements that govern activities addressed in the BA.

Section 2, *Baseline–Regional*, provides a description of the status of the listed species, their geographic distribution, and their habitat requirements. Section 2 also contains a description of the past and present actions including state, federal, local government, and private actions that are contemporaneous with the Section 7 Consultation.

Many of the facilities included in this consultation are already in place and operational. Section 3, *Baseline–Project,* contains a description of the facilities and their operations under the environmental baseline. This section presents baseline operations of project facilities and identifies effects of operation and maintenance activities on listed fish species.

Section 4, *Proposed Project Description*, presents a description of the proposed project under consideration, including operations and maintenance activities associated with project facilities and conservation actions directed toward improving environmental conditions. Where the proposed operations and maintenance actions are the same as those occurring under the baseline conditions, the descriptions in Section 3 are referenced. The descriptions of new facilities and changes in operation and maintenance practices are presented in Section 4. The changes in operations and maintenance and the additional facilities are proposed primarily to avoid injury to, or improve habitat conditions for, listed salmonids. During the development of the proposed modifications, a large number of alternatives were evaluated (ENTRIX, Inc. 2002c, 2003a). Many of these alternatives are discussed in Appendix A. Alternatives that were found to be either infeasible or unable to meet project objectives in the Alternatives Report (ENTRIX, Inc. 2002c, 2003a) were not considered in Appendix A.

Some of the modifications presented in Section 4 are underway or are being conducted on a trial basis. The description of the action indicates whether modifications are being currently implemented. Other modifications proposed in Section 4 are more conceptual and will require additional analyses and further refinement prior to implementation.

Section 5, *Potential Project Effects*, contains the effects analysis for the project actions described in Section 4 on coho salmon, steelhead, and Chinook salmon. The effects associated with each action are presented by species. The effects associated with the modified operations and proposed new facilities are compared to the effects identified under the baseline in Section 3. In addition to the evaluation of potential effects from the changes to project operations, the effects of ongoing operations and maintenance practices are also identified for each species and lifestage. The potential effects are evaluated and ranked relative to the degree of potential effect. Both direct and indirect effects of the proposed project are considered. Factors considered in the effects analysis

include the relationship of the affected area to the species distribution, the affected life-history stage, the type of effect, the duration or frequency of the effect, and the response of the listed species to the effect.

Section 6, *Integration of Potential Effects*, reviews the effects noted in Section 5 and considers the activities in concert to determine the collective effect of project operations on each species. The examination of the collective effects of the proposed project includes the future direct and indirect effects from operations and maintenance, both positive and negative. It focuses on the species response to the effects at a population level.

Section 7, *Interrelated and Interdependent Actions and Cumulative Effects*, identifies and evaluates the effects of these activities. Activities considered interrelated or interdependent include potential effects to listed fish species related to water supply deliveries to SCWA's contractors and customers, recreational fisheries in the reservoirs, and fishing activities for hatchery-produced steelhead.

Section 7 also presents the effects of cumulative actions. Many of the planned future actions will require consultation under Section 7 of ESA, and therefore are not considered in this BA. Actions appropriate to consider in this BA are state actions with respect to future water rights. The SWRCB grants appropriative water-right permits and licenses for authorizing surface water diversions. This is a state action that is reasonably certain to occur and may affect listed species in the Russian River and its tributaries.

The next several sections of the BA provide additional information on the results of studies and other reports used in the preparation of the BA. This information is provided to increase the readers' understanding of the project, and to clarify the terms used in the document.

Section 8, *Literature Cited*, presents the references cited in the document and the information obtained from personal communications with other individuals.

Section 9, *Glossary*, provides definitions of technical terms used in the document.

Section 10, *Photo Tour*, provides photos of the facilities and project features.

The Appendices include supplemental information to the BA. Appendix A*, Alternative Actions*, presents an evaluation of alternative actions that were considered, but not proposed, for inclusion as part of the project description. Appendix B, *Flow Proposal* for *the Russian River,* includes additional information on the Flow Proposal and the permit terms that would be requested for the water-right permits held by SCWA. Appendix C, *Evaluation Criteria*, presents the information on the evaluation criteria used in the effects analysis. Appendix D, *Preliminary Recreational Analysis for the Flow Proposal*, and Appendix E, *Preliminary Economic Analysis for the Flow Proposal*, include supplemental studies conducted to assist in the development and evaluation of the alternative scenarios for managing instream flows in the Russian River and Dry Creek. Appendix F, *Flow-Habitat Assessment Study,* reports the results of the interagency study

to evaluated habitat conditions at several flows in Dry Creek and the Upper Russian River.

1.2.1 PROJECT AREA

The project area includes the Russian River from Coyote Valley Dam downstream to the Russian River Estuary, Dry Creek from Warm Springs Dam to the mouth, and a number of smaller tributaries of the Russian River in Sonoma County (Figure 1-1).

Project operations related to Warm Springs Dam, Coyote Valley Dam, and water diversion facilities directly affect flows in the mainstem Russian River and in Dry Creek. Project operations related to channel maintenance and restoration and conservation actions may affect tributaries to the Russian River.

The watersheds upstream of Warm Springs Dam and Coyote Valley Dam were not included in the ESA listing and are not part of the project-affected area considered in this BA. A short reach of the East Fork, downstream of Coyote Valley Dam, is also affected by project operations.

To facilitate the analysis of potential effects, the project area has been subdivided into several geographic regions defined within the project area (Table 1-1). The Russian River has been divided into four major reaches—the Upper, Middle, and Lower Russian River—and, for this report, the Estuary is considered a fourth reach of the river.

Table 1-1 Russian River Watershed Regions

Region	Description
East Fork	Includes a short stretch of river downstream of Coyote Valley Dam to the confluence with the Russian River. The confluence of the Russian River and the East Fork is commonly referred to as "the Forks."
Mainstem	Includes the main channel of the Russian River. The mainstem can be divided into four reaches: Upper, Middle, Lower, and Estuary.
Upper Reach	Includes the mainstem of the Russian River between the Forks near Ukiah downstream to Cloverdale.
Middle Reach	Includes the mainstem of the Russian River from Cloverdale to the confluence with Dry Creek near Healdsburg.
Lower Reach	Includes the mainstem of the Russian River downstream of its confluence with Dry Creek, excluding the Mark West Creek watershed. Most tributaries to this region enter the river from the northwest. Flow and water quality modeling results are presented for two stations in this reach, Below Dry Creek and Hacienda
Estuary	Includes the mainstem of the Russian River from the river mouth, located near the town of Jenner, to approximately 6 to 7 miles upstream in the Duncans Mills and Austin Creek areas. Occasionally, tidal influence occurs as far as 10 miles upstream to Monte Rio. Willow Creek Marsh occasionally receives saltwater influence.

Table 1-1 Russian River Watershed Regions (Continued)

Region	Description
Dry Creek Watershed	Includes Dry Creek and all of its tributaries between Warm Springs Dam to the confluence with the Russian River. The Dry Creek watershed is the major sub-basin on the western side of the Middle Reach of the Russian River. Flow and water quality modeling results are presented for two stations in Dry Creek, Below Warm Springs Dam and Lower Dry Creek
Mark West Creek Watershed	Includes Mark West Creek, the Laguna de Santa Rosa, Santa Rosa Creek, and their tributaries. The Mark West Creek watershed is southeast of the Russian River. The cities of Santa Rosa and Windsor are in this region. The Laguna de Santa Rosa is south of Mark West Creek and includes the cities of Rohnert Park, Sebastopol, Cotati, and Santa Rosa.

1.2.2 CONSULTATION TO DATE

USACE, SCWA, and NOAA Fisheries entered into an MOU on December 31, 1997, to establish a framework for the ESA Section 7 Consultation. The MOU created three committees to assist the USACE and SCWA with the Section 7 Consultation. The Executive Committee, composed of managers for USACE, SCWA, NOAA Fisheries, CDFG, and Mendocino County, provides guidance to the overall process. The Agency Working Group, (AWG), a technical work group that includes staff from USACE, SCWA, NOAA Fisheries, CDFG, and NCRWQCB provides technical review of the draft products. The third committee, the PPFC, includes county supervisors and managers of state and federal agencies. The role of the PPFC is to provide a conduit to the general public, where reports and analyses can be disseminated and comments and information can be received. Beginning in April, 1998 to date, the PPFC has held eighteen meetings, and has discussed the project products and alternative actions for project operations.

A series of interim reports evaluated effects of USACE, SCWA, and MCRRFCD operations on coho salmon, steelhead, and Chinook salmon under baseline conditions. Draft interim reports were submitted to the AWG and Executive Committee for review and comment. The interim reports were presented before the PPFC and public comments were taken. The interim reports included:

- *Interim Report 1: Flood Control Operations at Coyote Valley and Warm Springs Dams* (ENTRIX, Inc. 2000a)
- *Interim Report 2: Fish Facility Operations* (FishPro and ENTRIX, Inc. 2000)
- *Interim Report 3: Flow-Related Habitat* (ENTRIX, Inc. 2002b)
- *Interim Report 4: Water Supply and Diversion Facilities* (ENTRIX, Inc. 2001d)
- Interim Report 5: Channel Maintenance (ENTRIX, Inc. 2001b)

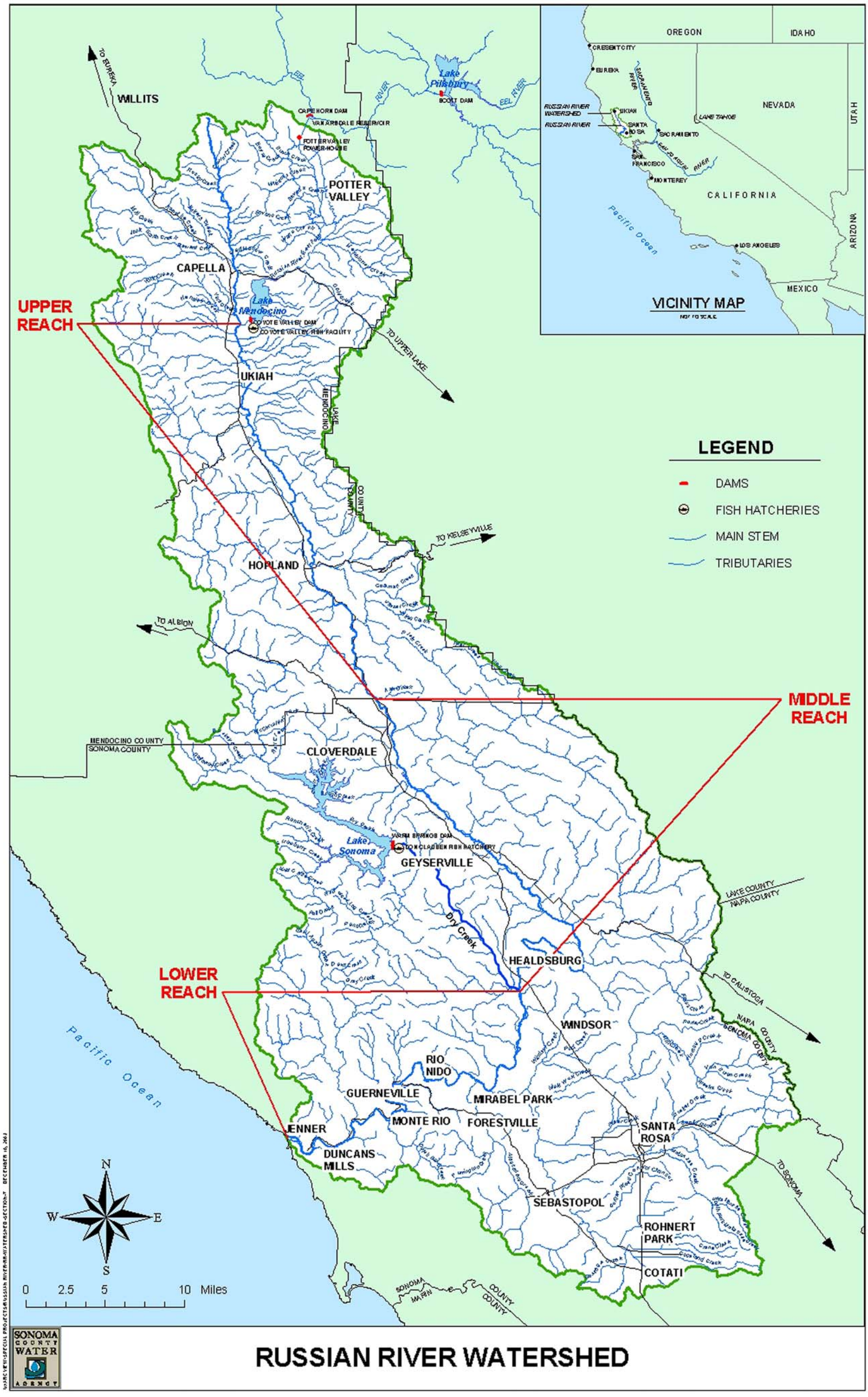

Figure 1-1 Map of the Russian River Watershed and Location of Reach Boundaries

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- *Interim Report 6: Restoration and Conservation Actions* (ENTRIX, Inc. 2001c)
- *Interim Report 7: Hydroelectric Projects Operations* (ENTRIX, Inc. 2000b)
- *Interim Report 8: Russian River Estuary Management Plan* (ENTRIX, Inc. 2001a)

Additional documents developed for the evaluation of the hatchery operations include:

- *Hatchery and Genetic Management: Monitoring and Evaluation Plan and Benefit Risk Analyses for Russian River Fish Production Facilities* (FishPro and ENTRIX, Inc. 2002)
- Hatchery and Genetic Management Plans for Russian River Fish Production Facilities, Coho Salmon and Steelhead (FishPro and ENTRIX, Inc. 2003)

Based on effects identified in these analyses, a list of alternative actions was developed to reduce adverse effects to listed species. Potential effects of alternative actions were evaluated in *Alternatives: Evaluation of Management Actions* (ENTRIX, Inc. 2002c). This report was presented to the AWG, the Executive Committee, and the PPFC for comment. Alternatives for flow management in the Russian River were considered in more detail in an addendum to the alternatives report (ENTRIX, Inc. 2003a).

Part I of the BA was released in June 2003. This document compared information on the first four sections of the BA: the institutional constraints, baseline environment, baseline project operations, and the proposed project, including the operation of SCWA's existing facilities. The Draft BA was made available to the public on January 16, 2004.

Previous ESA actions related to listed salmonids on USACE activities in the Russian River watershed are summarized below.

- July 1997. NOAA Fisheries. Biological Assessment for the Repairs of the Emergency Water Supply Line (EWSL) at Warm Springs Dam, California.
- August 22, 1997. NOAA Fisheries. Letter. Emergency Consultation for EWSL.
- September 30, 1997. NOAA Fisheries issued to USACE a BO and incidental take statement for repair work on the EWSL at Warm Springs Dam and the annual pre-flood inspection at Warm Springs Dam.
- November 1997. USACE submitted to NOAA Fisheries a supplement to its July 1997 BA for a vibration analysis test on Warm Springs Dam outlet works. Due to safety concerns, the testing proceeded without a BO. NOAA Fisheries protested additional tests performed by USACE in March 1998.
- November 25, 1997. U.S. Army Corps of Engineers. Letter. Request Section 7 Consultation for EWSL testing.
- January 8, 1998. NOAA Fisheries. Letter. Consultation for EWSL.

- January 21, 1998. U.S. Army Corps of Engineers. Letter. Formal Consultation for EWSL.
- January 28, 1998. NOAA Fisheries. Letter. Consultation for EWSL.
- March 24, 1998. NOAA Fisheries. Letter. Recommended interim ramping rates.
- April 13, 1998. NOAA Fisheries. Letter. Vibration Testing.
- April 23, 1998. U.S. Army Corps of Engineers. E-mail. Proposal to fix and reinstall damaged flashboards at Warm Springs Dam.
- April 24, 1998. NOAA Fisheries. E-mail. Concurrence and ramping rates for flashboard repairs.
- June 17, 1998. NOAA Fisheries. Letter. Vibration Analysis.
- July 1998. U.S. Army Corps of Engineers. Biological Assessment. Periodic Inspections for Warm Springs Dam, Sonoma County and Coyote Valley Dam, Mendocino County.
- July 22, 1998. NOAA Fisheries. Letter. Scheduling of Periodic Inspections.
- July 24, 1998. U.S. Army Corps of Engineers. Letter. Request Section 7 Consultation for Periodic Inspections.
- July 27, 1998. NOAA Fisheries. Letter. Periodic Inspections.
- August 21, 1998. U.S. Army Corps of Engineers. Letter. Periodic Inspections.
- September 4, 1998. NOAA Fisheries issued to USACE a BO and incidental take statement for periodic inspections at Warm Springs Dam and Coyote Valley Dam.
- November 3, 1998. NOAA Fisheries. Letter. Stream Monitoring Survey Results performed by NOAA Fisheries staff.
- November 4, 1998. NOAA Fisheries. Letter. Consultation prior to flood season activities.
- November 17, 1998. U.S. Army Corps of Engineers. Letter. Submission of Biological Assessment for Flood Control Operations of Coyote Valley Dam, Mendocino County and Warm Springs Dam, Sonoma County Russian River Basin, California.
- December 4, 1998. U.S. Army Corps of Engineers. Letter. Proposal to remove flashboards from stilling basin at Warm Springs Dam.

- December 9, 1998. U.S. Army Corps of Engineers. Letter. Supplemental information for proposal to remove flashboards from stilling basin at Warm Springs Dam.

- December 9, 1998. NOAA Fisheries. NLAA Determination. Flashboard Removal at Warm Springs Dam. December 9, 1998.

- February 2, 1999. U.S. Army Corps of Engineers. Letter. Request change of NLAA determination.

- February 3, 1999. NOAA Fisheries. NLAA Determination. Flashboard Removal at Warm Springs Dam.

- May 1999. U.S. Army Corps of Engineers. Biological Assessment. Flood Control Operations of Coyote Valley Dam, Mendocino County, and Warm Springs Dam, Sonoma County, Russian River Basin, California. Incorporates the monitoring reports and recommendations from the most recent pre-flood inspections, maintenance activities and 5-year periodic inspection.

- May 4, 1999. U.S. Army Corps of Engineers. Letter. Pre-Flood Inspections and Dam Safety Repairs for Coyote Valley Dam and Warm Springs Dam in the Russian River Basin.

- May 17, 1999. U.S. Army Corps of Engineers. Letter. Additional Information Coyote Valley Pre-Flood Inspection.

- June 1999. NOAA Fisheries issued to USACE a BO and incidental take statement for pre-flood inspections at Warm Springs Dam and Coyote Valley Dam.

- June 10, 1999. NOAA Fisheries. Amendment to Biological Opinion for Pre-flood Inspections at Coyote Valley Dam and Warm Springs Dam 1999.

- February 22, 2000. U.S. Army Corps of Engineers. Emergency Inspection of EWSL at Lake Sonoma/Warm Springs Dam Project.

- February 23, 2000. NOAA Fisheries issued to USACE a letter of concurrence with a proposed action for emergency repairs to the EWSL at Warm Springs Dam.

- March 17, 2000. U.S. Army Corps of Engineers. Letter. Pre-Flood Inspections and Dam Safety Repairs for Coyote Valley Dam and Warm Springs Dam in Russian River Basin.

- May 9, 2000. NOAA Fisheries. Biological Opinion. Pre-Flood Inspections and Dam Safety Repairs for Coyote Valley Dam and Warm Springs Dam in the Russian River Basin.

- May 11, 2000. U.S. Army Corps of Engineers. Pre-Flood Inspection Report – Observations and Lessons Learned.

- July 6, 2000. U.S. Army Corps of Engineers. Rescheduling of FY 2000 Pre-Flood Inspection/Gate Testing for Coyote Valley Dam and Sonic Meter Installation at Warm Springs Dam.

- September 22, 2000. NOAA Fisheries issued to USACE a letter of not likely to adversely affect federally-listed species or habitat for reductions in flow to 25 cfs below Warm Springs Dam and Coyote Valley Dam during EWSL repairs at Warm Springs Dam and pre-flood inspections at Coyote Valley Dam.

- September 22, 2000. NOAA Fisheries issued to USACE a letter of not likely to adversely affect federally-listed species or habitat for reduction in flow at Warm Springs Dam during sonic meter installation at Warm Springs Dam.

- October 11, 2000. NOAA Fisheries issued to USACE a BO for inspection and gate testing at Coyote Valley Dam.

- November 2000. U.S. Army Corps of Engineers. Results of the USACE, NOAA Fisheries, and SCWA Interagency Stream Survey Report for Pre-Flood Inspections.

- August 27, 2001. NOAA Fisheries issued to USACE a letter of not likely to adversely affect federally-listed species or habitat for pre-flood inspection and repair of the outlet conduit at Warm Springs Dam.

- September 20, 2001. NOAA Fisheries issued to USACE a BO for a pre-flood inspection at Coyote Valley Dam and inspection of City of Ukiah repairs to a bifurcation plate in the plenum chamber.

- September 25, 2001. SCWA, USACE, and NOAA Fisheries 2001 Field Notes and Flow Data Charts.

- October 27, 2001. NOAA Fisheries. Concurrence with NLAA Determination. FY 2001 Pre-Flood Inspections for Warm Springs Dam.

- March 28, 2002. U.S. Army Corps of Engineers. Pre-Flood Inspections for Warm Springs Dam.

- August 14, 2002. NOAA Fisheries issued to USACE a letter of not likely to adversely affect federally-listed species or habitat for pre-flood inspection at Warm Springs Dam.

- August 22, 2002. U.S. Army Corps of Engineers. FY 2002 Pre-Flood Inspections and Dam Safety Repairs for Coyote Valley Dam in the Russian River Basin.

- September 25, 2002. NOAA Fisheries issued to USACE a BO for pre-flood inspection at Coyote Valley Dam and repair work conducted by the City of Ukiah.

- September 26, 2002. SCWA, USACE, and NOAA Fisheries 2002 Field Notes and Flow Data Charts.

- November 27, 2002. Sonoma County Water Agency. Flow Measurements from Coyote Valley Dam Pre-flood Inspections.

- June 13, 2003. Draft Biological Assessment – Russian River Part I, ENTRIX, Inc.

- June 25, 2003. U.S. Army Corps of Engineers – Periodic Inspections for Warm Springs Dam.

- July 2003. U.S. Army Corps of Engineers – Preflood Survey Results 2001-2002.

- July 22, 2003. NOAA Fisheries. NOAA Concurrence Letter for Periodic Inspections at Warm Springs Dam.

- August 6, 2003. U.S. Army Corps of Engineers – Periodic Inspection Reschedule for Warm Springs Dam.

1.2.3 Recovery Plans in the Project Area

No federal recovery plans have been completed for Russian River anadromous fish. Section 4(f) of the ESA requires NOAA Fisheries to develop and implement recovery plans for the conservation and survival of threatened and endangered species. Recovery plans for Central California Coast (CCC) coho salmon, CCC steelhead, and California Coastal Chinook salmon are underway. All three species are included in the CCC recovery planning domain. A Technical Recovery Team (TRT) has been convened to begin development of a recovery plan for the CCC that includes the Russian River stocks. The TRT is in the process of identifying independent populations of the three species included in the recovery domain.

1.3 Regulatory Status of Listed Fish Species in the Russian River

Biological resources of primary concern within the project area are coho salmon, steelhead, and Chinook salmon. Coho salmon and steelhead are native Russian River species, although there have been many introductions from other river systems (CDFG 1991). It is uncertain whether Chinook salmon is a native species of the Russian River (NMFS 1999c). They have not been stocked since 1998 and continue to reproduce in the watershed. The naturally-spawning Chinook salmon are considered part of the California Coastal Chinook salmon population, which is protected under the ESA.

Coho salmon, steelhead and Chinook salmon in the Russian River are each listed as threatened under the ESA. The listing process evaluates whether or not a species is vulnerable to extinction. There are two levels at which species are listed: threatened or endangered. An “endangered” species is one that is in danger of extinction throughout all,

or a significant portion, of its range. A "threatened" species is one that is likely to become endangered in the foreseeable future. The listing process goes though a careful review of the geographic distribution, abundance levels, condition of the available habitat, threaten destruction or modification of habitat, and other natural or manmade factors affecting its continued existence. This analysis was completed for the populations that include the Russian River stocks. The determination at that time was that the populations were likely to become endangered in the foreseeable future and should be listed as threatened.

Once a species has been listed, NOAA fisheries periodically, conducts a status review to determine if the abundance levels of the listed population have changed, or if the risk factors affecting the listed population have changed. NOAA Fisheries is currently conducting a status review of populations that include the Russian River stocks. In the draft status review CCC steelhead and California Coastal Chinook salmon is proposed to continue to be listed as threatened. CCC coho salmon is proposed to be upgraded to "endangered" because abundance data show that numbers continue to decline and risk factors that threaten habitat continue to increase (NOAA Fisheries 2003a).

The pertinent Federal Register (FR) notices for these species are provided in Table 1-2.

Table 1-2 Federal Register Notices for the Salmonids of the Russian River

Species	Listing	Take Prohibitions	Critical Habitat
Coho Salmon	Vol. 61, No. 212, pp. 56138-56147 Oct. 31, 1996	Vol. 67, No. 6, pp. 1116-1133 January 9, 2002	Vol. 64, No. 86, pp. 24049-24062 May 5, 1999
Steelhead	Vol. 62, No. 159, pp. 43937-43954 Aug. 18, 1997	Vol. 65, No. 132, pp. 42422-42481 July 10, 2000	Vol. 65, No. 32, pp. 7764-7787 February 16, 2000
Chinook Salmon	Vol. 64, No. 179, pp. 50394-50415 Sept. 16, 1999	Vol. 67, No. 6, pp. 1116-1133 January 9, 2002	Vol. 65, No. 32, pp. 7764-7787 February 16, 2000
Steelhead and Chinook Salmon			Vacated by April 30, 2002 court order[1] Vol. 68 No. 188 p. 55900 September 29, 2003

[1] Critical habitat designations vacated by National Association of Home Builders v. Donald L. Evans, Civil Action No. 00-2799 (CKK) (District Court, District of Columbia).

NOAA Fisheries designated the Russian River and its tributaries as critical habitat for steelhead and Chinook salmon (as described in the following sections). However, on March 11, 2002, NOAA Fisheries submitted a proposed settlement agreement in U.S. District Court to rescind current critical habitat designations for 19 Evolutionarily Significant Units (ESUs), which included coho salmon, steelhead, and Chinook salmon populations in the Russian River basin. The court accepted the settlement proposed and remanded critical habitat designation to the NOAA Fisheries for reconsideration. NOAA Fisheries is conducting a new, more thorough analysis of the economic effects from designation of critical habitat. NOAA Fisheries is expected to proceed with re-issuing critical habitat designations after that analysis is complete.

For the BA, the evaluation of critical habitat described by NOAA Fisheries in the original critical habitat designations will be used to guide the evaluation of potential effects on habitat. The goal of regulation of critical habitat is to preserve habitat elements essential to the continued existence of the species. By using the approach outlined in the original critical habitat designation, the effects of the proposed project on habitat important to listed salmonids will be considered.

1.3.1 CENTRAL CALIFORNIA COAST COHO SALMON (*ONCORHYNCHUS KISUTCH*)

The CCC coho salmon ESU consists of all naturally-spawned coho salmon populations from Punta Gorda (Humboldt County) south through the San Lorenzo River (Santa Cruz County), and includes coho salmon populations in the Russian River. This ESU also includes tributaries to San Francisco Bay, excluding the Sacramento-San Joaquin River system.

The critical habitat for the CCC coho ESU encompasses all accessible river reaches within the ESU (i.e., from Punta Gorda south to the San Lorenzo River). Critical habitat consists of all waterways, substrate, and adjacent riparian zones below long-standing, naturally-impassable barriers (i.e., natural waterfalls in existence for at least several hundred years). Adjacent riparian zones were defined on the basis of functional criteria rather than quantitative criteria. Specifically, the adjacent riparian zone is the area adjacent to a stream that provides the following functions: shade, sediment, nutrient or chemical regulation, streambank stability, and input of large woody debris or organic matter. Areas specifically excluded from critical habitat included historically-occupied habitat upstream of specific dams identified in the FR notice (including Warm Springs Dam and Coyote Valley Dam), and Indian tribal lands.

1.3.2 CENTRAL CALIFORNIA COAST STEELHEAD (*ONCORHYNCHUS MYKISS*)

The CCC steelhead ESU consists of steelhead occupying the Russian River and all river basins south to Aptos Creek in Santa Cruz County (inclusive). The CCC steelhead ESU also occupies drainages of San Francisco and San Pablo bays, eastward to the Napa River (inclusive), but not including the Sacramento-San Joaquin River basin. The Russian River is the largest drainage in the CCC steelhead ESU. Steelhead reared at the DCFH were specifically excluded from the listed ESU in the final rule.

Original critical habitat for CCC steelhead encompassed the current freshwater and estuarine range inhabited by the ESU (i.e., from the Russian River south to Aptos Creek). Critical habitat consisted of all waterways, substrate, and adjacent riparian zones below long-standing, naturally-impassable barriers. As with coho salmon, habitat excluded from critical habitat included river reaches upstream of several dams that block access to former anadromous habitats (including Warm Springs Dam and Coyote Valley Dam), and Indian tribal lands.

1.3.3 CALIFORNIA COASTAL CHINOOK SALMON (*ONCORHYNCHUS TSHAWYTSCHA*)

The California Coastal Chinook salmon ESU consists of naturally-spawned populations from Redwood Creek in Humboldt County south through the Russian River (inclusive).

Hatchery populations are not considered essential for the recovery of the ESU and, therefore, are not listed at this time. In the final rule, NOAA Fisheries excluded Chinook salmon raised at DCFH from the California Coastal ESU. The Russian River basin presently contains the southernmost persistent population of Chinook salmon on the California coast.

The original critical habitat for the California Coastal Chinook ESU encompassed accessible reaches of all rivers (including estuarine areas and tributaries) within the current range inhabited by the ESU (i.e., from Redwood Creek in Humboldt County south through the Russian River). The critical habitat defined for Chinook salmon recognized the same exclusions as coho salmon and steelhead.

1.4 INSTITUTIONAL AGREEMENTS AND CONSTRAINTS

USACE, SCWA, and MCRRFCD conduct activities and operate facilities included in the Section 7 Consultation under regulatory constraints and existing agreements, contracts, and vested property rights involving state, local, and federal entities, as well as individual property owners. Some agreements may constrain the extent to which, absent regulatory approvals and/or changes to the agreements, USACE, SCWA, and MCRRFCD can implement the conservation measures, reasonable and prudent measures, and conservation recommendations developed by NOAA Fisheries in the BO for the consultation. Implementation of the Flow Proposal by USACE and SCWA would also require additional regulatory approvals prior to implementation. This section describes the existing agreements that pertain to activities under consideration in this consultation.

1.4.1 POTTER VALLEY PROJECT

Much of the water that flows from the East Fork Russian River into Lake Mendocino originates in the Eel River watershed. Starting in 1908, water has been diverted from the Eel River to the East Fork Russian River through a tunnel to the hydroelectric plant. Now operated by Pacific Gas and Electric Company (PG&E), the project is called the Potter Valley Project (PVP). Scott Dam, forming Lake Pillsbury, began operating in 1922 to provide water to the project through the summer.

In 1965, SCWA entered into an agreement with PG&E in anticipation of the Federal Energy Regulatory Commission (FERC) considering the relicensing of the PVP upon the expiration of PG&E's 50-year license to generate power (FERC Project No. 77). This agreement acknowledges that the continued operation of the PVP is important to the successful operation of the Coyote Valley Dam Project (CVDP) and SCWA's water transmission system. The agreement provides for the parties "cooperating in the public interest to secure, insofar as may be possible, such continuation of operation." Under the agreement, SCWA is obligated to maintain riverbanks and a series of 15 check-dam structures (which were constructed as part of the PVP along the East Fork Russian River between the Potter Valley powerhouse and Lake Mendocino).

Article 39 of the existing FERC-issued PVP license required a 10-year study of the effects of the project operations on downstream fish resources and provided for FERC

consideration of changes to the required minimum Eel River flows. The minimum flows at issue are those necessary to protect and maintain anadromous salmon and steelhead trout populations in the Eel River. In February 1999, FERC issued a draft environmental impact statement (DEIS) for its planned reconsideration of Eel River minimum streamflows required downstream of the PVP. In May 2000, FERC issued a final environmental impact statement (FEIS). The FEIS evaluated the four alternatives addressed in the DEIS, and proposed a recommended flow regime.

In November 2002, NOAA Fisheries issued a final BO pursuant to the FERC action, which concluded that the recommended alternative in the FEIS would pose jeopardy to threatened salmonids in the Eel River. FERC action is pending on the requests for the preparation of a supplement to the FEIS and proposed modification to the recommended Flow Proposal. FERC has not yet made a final decision on a license amendment to establish new Eel River minimum streamflow requirements for the PVP. The outcome of these decisions may affect the quantities of water diverted from the Eel River to the East Fork Russian River in the future.

1.4.2 RUSSIAN RIVER PROJECT

The Russian River Project was initiated to control flooding and develop water resources and recreational opportunities in the Russian River basin. The Russian River Project is a water diversion and storage project operated by SCWA and USACE to furnish water from the Russian River, the East Fork Russian River, and Dry Creek for domestic, industrial, municipal, irrigation (Lake Mendocino and Russian River water only), and recreational use. The Russian River Project consists of a number of elements, including Coyote Valley Dam and Warm Springs Dam, associated channel stabilization works, recreational facilities, and fish production facilities to mitigate and enhance fisheries in the basin.

1.4.2.1 Coyote Valley Dam Project

On November 15, 1949, USACE issued and filed with Congress a report recommending the construction of Coyote Valley Dam. In response, the California legislature created the Sonoma County Flood Control and Water Conservation District (later renamed the Sonoma County Water Agency) and the Mendocino County Flood Control and Water Conservation District (later renamed the Mendocino County Water Agency). Under this legislation authorizing construction of the dam, these agencies were to provide the local cooperation and funding required to construct the dam. The state legislation authorizing the formation of the local entities included a procedure to establish a more localized district (specific to the Russian River basin), which was established in 1956 as the Mendocino County Russian River Flood Control and Water Conservation Improvement District.

The CVDP was authorized by Section 204 of the federal 1950 Flood Control Act and described in House Document Number 585 by the 81st Congress. The Flood Control Act approved the plan in the Russian River basin for flood control and water conservation. The act appropriated $11.522 million for the initial stage of the plan and required that,

prior to starting construction, local interests contribute $5.598 million to pay for the conservation benefits (i.e., water supply) resulting from the project.

Public Law 404, approved February 10, 1956, authorized an additional $1.165 million federal appropriation toward the completion of the initial stage of the CVDP. In March 1956, SCWA made the required cash contribution in accordance with the authorizing act. In December 1956, the MCRRFCD reimbursed SCWA $633,000 for a share of the water supply capacity of the reservoir. These payments satisfied the entire local cost-sharing obligation for the CVDP, except for the obligation to maintain erosion control measures. These measures were constructed as part of the CVDP at 91 locations along the Russian River from Calpella to Healdsburg.

The CVDP began storing water in 1958, and all facilities were completed in 1959. No formal written contract exists that defines the respective rights and obligations of USACE, SCWA, and MCRRFCD regarding the CVDP. These rights and obligations are, however, documented in the legislation and various other writings. Such documentation includes resolutions of assurances by SCWA's Board of Directors, USACE's Water Control Manual for the CVDP (USACE 1984), as well as decisions of SWRCB (discussed in Section 1.4.3). Other components of the CVDP, which include hydroelectric projects, flood control structures in Mendocino and Sonoma counties, and fish production facilities, are described below.

City of Ukiah Hydroelectric Project FERC License

The City of Ukiah filed an application to FERC for a major license under Part 1 of the Federal Power Act on April 13, 1981, to construct, operate, and maintain the Lake Mendocino Power Project No. 2841. The FERC license was issued April 1, 1982 (FERC 1982) and will be in effect for 50 years. Additionally, USACE issued a license to the City of Ukiah on April 1, 1982 for the use of land and facilities incidental to the construction and operation of the hydroelectric project. Construction of the hydroelectric plant was completed in December 1986. It has a total generation capacity of 3.5 megawatts (MW) through two turbine and generator units.

Two problems had to be overcome in the development of the project. First, the outlet works needed to be retrofitted to withstand the full hydrostatic pressure of Lake Mendocino. Also, a bifurcation with an appropriate valve configuration needed to be installed to permit flows to bypass the turbine. Second, concerns about the dissolved oxygen (DO) content of water passing through the turbine resulted in a requirement to construct oxygenation facilities at the outlet. The terms of the FERC license dictate project operations including release of suitable bypass flows meeting water quality standards to maintain fish and wildlife habitat downstream during operations and maintenance of the hydroelectric facility.

Russian River Flood Control in Mendocino County

Coyote Valley Dam is the primary flood control facility on the upper Russian River. The dam is located on the East Fork Russian River approximately 3 miles northeast of the

City of Ukiah. Coyote Valley Dam forms Lake Mendocino, which has a design capacity of approximately 122,500 acre-feet (AF) and drains an area of approximately 105 square miles, or approximately 7 percent of the total Russian River basin (USACE 1986b). USACE controls flood releases from Coyote Valley Dam according to USACE's Water Control Manual detailing operational methods (USACE 2003a).

When Coyote Valley Dam was constructed, USACE recognized that flood control releases from Lake Mendocino would result in long-term bankfull flows, which would aggravate bank erosion. To offset potential erosion, USACE constructed stabilization works in the upper Russian River. These works were the first publicly-owned flood control facilities in the upper Russian River and were acquired by MCRRFCD as easements for the construction and maintenance of channel stabilization works associated with the Coyote Valley Dam.

The channel stabilization works constructed by USACE in Mendocino County consisted principally of rock riprapped levees, earth levees, pile and wire revetments, steel jacks, and various other types of bank protective works. These were constructed at intermittent sites along a 15-mile reach of the Russian River extending from approximately 5 miles north of Hopland to Calpella between 1956 and 1963. The MCRRFCD maintains these works under an agreement with USACE according to specifications identified in a Mendocino County operation and maintenance manual (O&M manual) developed in 1965 (USACE 1965a).

Russian River Channel Maintenance in Sonoma County

The first channel stabilization works constructed by USACE in Sonoma County were transferred to SCWA for maintenance in November 1962. The works constructed along the Russian River included channel clearing, pilot channels, bank protection works consisting of anchored steel jacks, flexible fence training structures, and wire mesh-gravel revetments. These installations were made in 41 different locations in the Alexander Valley.

To permit the construction of erosion control works, SCWA acquired easements from most of the property owners from just south of the old Preston Bridge north of Cloverdale, to a point approximately 4 miles downstream from the Alexander Valley Bridge. These acquisitions began in 1962. Over the next 10 years, USACE performed extensive bank protection and repairs within SCWA easements.

During this period, SCWA also sponsored the restoration of flood control works constructed by nonfederal interests in the upper Russian River. This restoration work was performed pursuant to Public Law 84-99 administered by USACE. SCWA provided 20 percent of the construction cost for these projects, either through direct funding or in-kind services. SCWA also agreed to provide necessary easements, which generally had already been acquired, and to hold and save the federal government free from damages.

Since 1972, SCWA has been responsible for maintaining the USACE channelization works associated with CVDP. SCWA is required to maintain these works in Sonoma

County following specifications identified in a Sonoma County O&M manual (USACE 1965b).

Coyote Valley Fish Facility

Before the completion of Coyote Valley Dam, it was believed that the higher streamflows resulting from operation of the project would mitigate for the loss of spawning and rearing habitat above the dam. After the project had been in operation, it became evident that the anticipated benefits (i.e., improved rearing habitat) would not be realized.

The Water Resources Act of 1974 enacted Section 95 of Public Law 93-251, which directed USACE to compensate for fish losses on the Russian River attributed to the operation of Coyote Valley Dam facilities in Mendocino County. This mitigation was accomplished, in part, by modification and expansion of the fish hatchery at Warm Springs Dam. The construction of the fish facility at Coyote Valley Dam and expansion of the DCFH facilities began in 1991 and both were operational by 1992. The mitigation program involves capturing returning adult steelhead at CVFF, collecting eggs and fertilizing them, then transporting the fertilized eggs to the DCFH for incubation and rearing to yearling size. These fish are then returned to CVFF for imprinting and release.

Currently, CDFG operates both DCFH at Warm Springs Dam and CVFF at Coyote Valley Dam under Cooperative Agreement DACW05-82-A-0066 as amended September 30, 1991 (USACE and CDFG 1991). The period of this agreement began in October 1991 and extended through September 1999. Yearly extensions have been granted to CDFG since 1999.

1.4.2.2 Warm Springs Dam Project

The Warm Springs Dam Project (WSDP), including downstream channel improvements, was authorized by Section 203 of the federal Flood Control Act of 1962 and described in House Document 547 by the 87th Congress. A contract between the federal government and SCWA for water storage space in Lake Sonoma was entered into in December 1964 and was amended on October 1, 1982. Under this contract, SCWA is obligated to repay the federal government the full cost of the joint-use facilities allocated to water conservation (i.e., water supply). SCWA must also pay its pro-rata share of the annual operation and maintenance costs of the WSDP. SCWA's share of these costs is funded through a property tax assessment on lands in Sonoma County and payments from water districts in Marin County that receive water from SCWA. The costs of operating and maintaining the fish production facility and recreation facilities at Warm Springs Dam/Lake Sonoma are borne by the federal government.

Warm Springs Hydroelectric Project, FERC License, and USACE Agreement

During construction of Warm Springs Dam, USACE conducted studies evaluating the feasibility of installing a hydroelectric plant. When the project was completed, it included minimum provisions for the future installation of a turbine. On July 27, 1983 SCWA filed an application to FERC for a major license under Part 1 of the Federal Power Act to construct, operate, and maintain Warm Springs Dam Hydroelectric Project Number 3351.

FERC issued SCWA a license to operate the facility on December 18, 1984. USACE issued a license to SCWA on December 18, 1984 for the use of land and facilities incidental to the construction and operation of the hydroelectric project effective April 1, 1985. Construction of the hydroelectric plant was completed in December 1988 at a cost of $5 million. The plant has a total generation capacity of 2.6 MW through a single turbine and generator unit.

SCWA entered into an agreement with USACE on December 22, 1989 providing for SCWA to operate and maintain the hydroelectric project. On January 4, 1989, SCWA entered into an agreement with PG&E, clarifying and standardizing the operating procedures for the project. An amendment to the power purchase agreement between SCWA and PG&E was entered into on January 31, 1989, which fixed the delivery capacity at 1.246 MW. The terms of the FERC license and the USACE agreement dictate project operations.

The FERC license contains a specific flow release schedule for Warm Springs Dam. The minimum flow releases from Warm Springs Dam required by FERC are met or exceeded as part of water supply operations conducted by SCWA or releases made to satisfy Decision 1610 (D1610). D1610 requires higher minimum instream flow from December 1 through March 31. Water supply releases during April through September generally exceed the FERC minimum instream flow requirements.

Each year between 11 and 15 million kilowatt-hours of power are produced and sold by SCWA to PG&E. In addition, SCWA also receives a "capacity payment" for the value of the power generation made available during the peak power demand season. To receive capacity payments, SCWA must generate a constant minimum of 1.246 MW during June, July, and August, which are the peak demand months for power consumption (PG&E 1984). Some short-term exceptions to this power requirement are allowed for circumstances that are beyond SCWA's control. This contract expires in December 2008.

Dry Creek Channel Maintenance

Erosion control projects on Dry Creek were constructed by USACE in conjunction with the WSDP (USACE 1991). These projects were installed at 15 different locations along Dry Creek. They were constructed under three different contracts between 1981 and 1989. Project components include: grouted riprap sills, rock riprap bank stabilization, installation of steel piles with timber planking, derrick stone toe protection, grade control structures, concrete weirs, and a stilling basin. As in the case of the flood control works constructed by USACE on the Russian River, SCWA is responsible for the maintenance and operation of the works on Dry Creek and maintains these facilities following specifications identified in the WSDP O&M manual (USACE 1991).

Operation of Don Clausen Fish Hatchery

The design and construction of the DCFH was an original component of the WSDP. The proposed design of the hatchery at Warm Springs Dam was a part of the USACE Design Memorandum No. 12 Fish and Wildlife Facilities, dated December 1972 (USACE 1972).

Following recommendations by USFWS and CDFG, hatchery operations were revised by Supplement No. 1 to Design Memorandum No. 12 in December 1974 (USACE 1974). Supplement No. 1 dictates the release of minimum flows to support adequate spawning and rearing habitat in Dry Creek. Between April 1 and November 30, the minimum flow is 25 cubic feet per second (cfs). For the remainder of the year, flows were not to be less than 75 cfs, depending on downstream riparian diversions and storage levels in the reservoir. Minimum flow rates for Dry Creek were increased in 1986 by SWRCB D1610. D1610 is summarized in Section 1.4.3, and the resultant flow management is discussed in Section 2.1.4.

As described earlier in Section 1.4.2.1, the Water Resources Act of 1974 initiated USACE construction of fish facilities at Warm Springs Dam and Coyote Valley Dam. Additional fish production capabilities were included in the hatchery program goals to enhance harvest opportunities for Chinook salmon and coho salmon (USFWS 1978).

DCFH went into service on October 1, 1980 under the control of CDFG in accordance with an USACE and CDFG Agreement dated June 8, 1979 and amended May 1, 1982. This agreement was subsequently modified to provide additional compensation for losses to fish spawning and rearing habitat above both Warm Springs Dam and Coyote Valley Dam. DCFH was expanded and linked with CVFF. Both the DCFH expansion and CVFF became operational in 1992.

1.4.3 WATER RIGHTS AND SWRCB DECISION 1610

The SWRCB has statutory authority over appropriative water rights in California. Appropriative water-right permits and licenses specify maximum rates and quantities of direct diversion, diversion to storage, and rediversion. Direct diversion refers to water diverted from a stream for use within the same season. Diversion to storage refers to water diverted from a stream during one season, which then is held in storage for subsequent use during another season. Rediversion refers to water that first is diverted to storage, and then later is released back into a stream and diverted again (rediverted) for beneficial use at a point downstream.

Riparian water rights are derived from ownership of land that borders a stream or lake. Riparian owners may directly divert natural flow for beneficial purposes on riparian lands without an appropriative water-right permit. If the diverted water is to be stored for use in another season or on nonriparian lands, then an appropriative water-right permit must be obtained. In general, riparian users must share available supplies among themselves. Riparian rights normally remain with the riparian land when the lands are sold.

SCWA holds water-right Permit 12947A for storage of water at Lake Mendocino and for direct diversion and rediversion of water originating in the East Fork Russian River at SCWA's Wohler/Mirabel diversion facilities. Under this permit, the combined direct diversion and rediversion rates are limited to 92 cfs (average monthly rate) and 37,544 AF per year (AFY). SCWA holds water-right Permit 16596 for storage of water at Lake Sonoma and for direct diversion and rediversion of 180 cfs from the Russian River at Wohler/Mirabel. SCWA also holds water-right Permits 12949 and 12950 for direct

diversions of 20 cfs and 60 cfs, respectively, at Wohler/Mirabel. The combined direct diversion and rediversion rates at Wohler/Mirabel under all four of SCWA's water-right permits presently are limited to no more than 180 cfs (116.3 million gallons per day [mgd]) and 75,000 AF during each October 1 to September 30 period.

SCWA controls and coordinates water supply releases from the Coyote Valley Dam and Warm Springs Dam projects in accordance with the provisions of D1610, adopted on April 17, 1986 (see Section 2.5). On March 8, 1985, SCWA and CDFG entered into an agreement specifying the minimum flows necessary for in-stream beneficial uses in both Dry Creek and the Russian River. D1610 incorporated the minimum streamflows contained in the agreement, which specifies a required minimum flow of 25 cfs in the East Fork Russian River from Coyote Valley Dam to the confluence with the Russian River. From that junction to Dry Creek, the minimum Russian River flows specified in D1610 are 185 cfs from April through August and 150 cfs from September through March during *normal* conditions, with reductions to 75 cfs and 25 cfs allowed during *dry* and *critically dry* hydrologic conditions, respectively. From Dry Creek to the Pacific Ocean, the minimum flow specified in D1610 is 125 cfs during *normal* conditions with reductions to 85 cfs and 35 cfs during *dry* and *critically dry* conditions, respectively. In Dry Creek, the minimum flows specified in D1610 are 75 cfs from January through April, 80 cfs from May through October, and 105 cfs in November and December during *normal* conditions. During *dry* and *critically dry* conditions, these requirements are reduced to 25 cfs from April through October, and 75 cfs from November through March.

SCWA has filed with the SWRCB an application for a new appropriative water-right permit and several petitions to change SCWA's existing water-right permits. The following sections summarize this application and these petitions.

1.4.3.1 Petitions to Add Points of Diversions for Russian River Customers

On June 10, 1991, SCWA filed petitions with the SWRCB to add three wells owned by the Windsor Water District (a predecessor to the Town of Windsor, which was incorporated in 1992), as additional authorized points of diversion and rediversion in SCWA's water-right Permits 12947A, 12949, 12950, and 16596. These petitions were filed to implement an agreement that SCWA entered into with the Windsor Water District on January 8, 1991. On January 4, 1994, the SWRCB issued an order granting these petitions.

On March 14, 1991, SCWA entered into an agreement with the Russian River County Water District (RRCWD) for the sale of water. On January 7, 1992, SCWA filed petitions with the SWRCB to add two wells owned by the RRCWD as authorized points of diversion and rediversion in SCWA's water-right permits. On May 10, 1994, the SWRCB issued an order granting these petitions.

The purpose of both of these sets of petitions (for Windsor and RRCWD) was to authorize water diversions and use by both districts under SCWA's water-right permits during times when no water is available in the Russian River for diversion under the districts' own water rights. This can occur during drier periods, when water in the

Russian River that has been released from storage in Lake Mendocino or Lake Sonoma is necessary to supply these diversions.

SCWA entered into similar agreements with the City of Healdsburg on November 17, 1992, and the Camp Meeker Recreation and Parks District on July 9, 1996. SCWA filed petitions with SWRCB on May 20, 1998, to add additional authorized points of diversion and rediversion for these entities' wells to the SCWA's appropriative water-right permits. SCWA also entered into an agreement with Occidental Community Services District on April 23, 2002, and filed a petition with the SWRCB on October 14, 2002 for this agreement. These entities will be authorized to divert water under these agreements if SWRCB issues orders granting SCWA's petitions for these agreements.

1.4.3.2 Petitions to Add Points of Diversion for New SCWA Facilities

SCWA filed petitions with the SWRCB on November 18, 1994 to add seven new points of diversion and rediversion to SCWA's water-right Permits 12947A, 12949, 12950, and 16596. The new points of diversion and rediversion consist of seven new water production wells, which were constructed in 1995 as the Russian River Well Field Development Project.

SCWA filed petitions with the SWRCB on March 17, 1999 to add Collector No. 6 (currently under construction), which is located in SCWA's Wohler diversion area, as a new authorized point of diversion and rediversion in Permits 12947A, 12949, 12950, and 16596.

On October 7, 1999, SCWA filed Application 30981 with the SWRCB for a new appropriative water-right permit for the direct diversion of 72 cfs of Russian River water at SCWA's existing intakes at Wohler and Mirabel and a new Collector (No. 6), currently under construction. The purpose of this application is to appropriate additional water for SCWA's WSTSP during times when there is surplus water in the Russian River. In its application and related petitions to amend SCWA's existing water-right permits, SCWA requested a combined limit for diversion and rediversion of 101,000 AFY at a maximum rate of 252 cfs under Permits 12947A, 12949, 12950, and 16596, and the new permit. On July 14, 2000 the SWRCB published notices of SCWA's petitions that were filed on May 20, 1998, March 17, 1999, and October 7, 1999.

1.4.3.3 Water Rights in Upper Russian River (Mendocino County)

Mendocino County's Ukiah and Hopland valleys, which extend from the confluence of West and East forks of the Russian River below Coyote Valley Dam to the Mendocino County line, generally comprise the service area of the MCRRFCD. The MCRRFCD holds water-right Permit 12947B, which authorizes the diversion and consumptive use of 8,000 AFY of Lake Mendocino and Russian River water. The SWRCB issued this permit in 1975, as a consequence of MCRRFCD's 1956 reimbursement to SCWA of part of the local cost of the CVDP.

Many water purveyors and individual water users divert water from the Russian River in Mendocino County. Some of the diversions are accounted for as being diversions of

"natural flow" water (water that would be in the river without Lake Mendocino or any PVP imports) or diversion of water released into the watershed from the PVP. The remaining diversions are accounted for as rediversion of "project water" that is released from storage in Lake Mendocino.

MCRRFCD has no facilities to divert water from the Russian River. Instead, many water users divert "natural flow" or PVP water, or redivert "project water" released from storage in Lake Mendocino, under the MCRRFCD's water right.

MCRRFCD reports direct diversions and rediversions of CVDP water from the Russian River mainstem by numerous individuals under MCRRFCD's water-right permit. MCRRFCD estimates the quantities of natural flow and PVP water that are available and diverted, and accounts for those amounts of water as being diverted by water users with pre-1949 appropriative rights. If there is inadequate natural flow and PVP water available for all diversions by holders of pre-1949 appropriative rights, then MCRRFCD reports the remaining diversions by these water-right holders as being rediversions of project water under MCRRFCD's water-right permit. The precise quantity of water actually diverted under valid pre-1949 appropriative rights is uncertain because this quantity varies with the crop types cultivated on the recognized pre-1949 places of use. The quantity of water diverted in Mendocino County prior to 1949 has been estimated to be 8,100 AF annually.

1.4.3.4 Water Rights in Lower Russian River (Sonoma County)

In addition to the rights for Coyote Valley Dam/Lake Mendocino water held by SCWA and MCRRFCD under Permits 12947A and 12947B, respectively, 10,000 AFY of CVDP water is reserved for rediversion for domestic and agricultural uses in Sonoma County. Water from this reservation is diverted and reported to the SWRCB by the individual water-right holders in Sonoma County. As in Mendocino County, many diverters in Sonoma County also hold pre-1949 appropriative rights, which authorize the direct diversion of available "natural flow" water and PVP water.

Municipal diverters of Russian River water in Sonoma County, other than SCWA, include the cities of Cloverdale and Healdsburg, the Town of Windsor, Geyserville Water Works, the RRCWD near Forestville, the Sweetwater Springs Water District in Guerneville and Monte Rio, the Camp Meeker Recreation and Parks District, and Occidental Community Services District. Some of these municipalities divert under SCWA water rights.

1.4.4 Russian River Estuary Management Responsibilities

A barrier beach (sandbar) forms periodically, primarily in the summer and fall, across the mouth of the Russian River, closing the Estuary and forming a lagoon. Historically, Sonoma County Department of Public Works breached the sandbar at the mouth when it closed to avoid flooding and property damage to adjacent lands (primarily in the Town of Jenner).

In 1992, the County of Sonoma, with assistance from the California State Coastal Conservancy, formed the Russian River Estuary Interagency Task Force (RREITF) to develop a management plan for the Estuary. The plan recommended a mechanical breaching program that reduced adverse environmental effects and protected private property from flooding. The management plan was adopted by the Sonoma County Board of Supervisors in 1995, and SCWA assumed responsibility for its implementation.

Since 1995, there have been, on average, five to seven mechanical breaching events per year. The sandbar has been breached using a bulldozer when water levels in the Estuary are between 4.5 and 7.0 feet in elevation. The goal is to manage water levels at the Jenner gage at or below 7.0 feet. This level was selected to avoid flooding in Jenner, minimize periods of poor water quality, and to avoid high flushing velocities following breaching. Water levels are determined from the automated tide recorder located at Jenner. The breaching schedule varies from year to year, depending on the frequency of closure of the Russian River mouth.

SCWA manages the breaching of the sandbar at the mouth of the Estuary in compliance with a number of state and federal permits and agreements. These include authorizations from California State Parks, the California State Lands Commission, the California Coastal Commission, CDFG, NCRWQCB, and USACE. Specifically, these permits and agreements include:

- California State Parks temporary use permit
- State Lands Commission General Lease for Public Agencies (PRC 7918.9)
- California Coastal Commission Coastal Development Permit (No. 2-01-033)
- CDFG 1601 Agreement (No. III-1176-96)
- SWRCB Waste Discharge Requirement (Order No. 81-73-WDR)
- USACE Clean Water Act Section 404 Permit (File No. 221211N)

1.4.5 SCWA River Monitoring Stations

The River Monitoring Stations Project was initiated in 1991 in response to requirements set forth by the California Department of Health Services (CDHS) as part of SCWA's domestic water supply permit (System No. 4910020, Water Permit No. 02-91-017). The project is intended to continuously monitor Russian River water to detect contamination prior to potential delivery to SCWA customers. The project includes collecting data on DO, pH, temperature, turbidity, depth, and conductivity simultaneously from five river monitoring stations between Hopland and Guerneville.

1.4.6 SCWA Flood Forecasting

On September 30, 1986, the Sonoma County Board of Supervisors and SCWA Board of Directors adopted Resolution No. 86-2070A approving development of a Flood Hazard

Mitigation Plan for Sonoma County. Section III of this plan requires SCWA to monitor changes in the Russian River floodway elevations and to alert the county's Director of Emergency Services when predetermined water levels are reached at various locations. Flood forecasting is done by SCWA in collaboration with the California Department of Water Resources (CDWR) using data from CDWR's River Forecasting Center. Flood forecasting predicts flood-crest levels in the lower Russian River so that evacuation plans can be made and steps taken to minimize property damage. Section IV of the plan requires SCWA to construct flood-hazard mitigation projects on a continuous basis. SCWA has agreements with the U.S. Geological Survey (USGS) and the California Department of Water Resources. These 1992 agreements are to maintain various stream-gaging stations on the Russian River (USGS 1992) and have access to information systems (USGS 1987) that provide stream-gage height and discharge information. This information is necessary for flood forecasting activities as well as managing flow releases to maintain water supply.

1.4.7 SCWA Zones 1A and 5A Flood Control Maintenance Responsibilities

In 1958, under the authority of SCWA's enacting legislation, the formation of nine geographical zones, each encompassing a number of hydrologic subareas in the watershed, was proposed as a means to finance, construct, and maintain flood control works in Sonoma County. Over the next several years, six of the nine flood control zones were formed, including two in the Russian River basin (Zones 1A and 5A). Zone 1A encompasses the Mark West Creek, Santa Rosa Creek, and Laguna de Santa Rosa subareas, which includes the cities of Santa Rosa, Sebastopol, and Windsor. Zone 5A encompasses the Russian River from the mouth to the Old Redwood Highway Bridge at Healdsburg, which includes the Austin Creek and Guerneville subareas.

The principal flood control facilities that SCWA maintains are located within Zone 1A in the Lower Russian River basin. Many of these flood control facilities were constructed as the Central Sonoma Watershed Project by SCWA under an agreement with the Santa Rosa Soil Conservation District and the U.S. Department of Agriculture, Soil Conservation Service ([USSCS] now called the Natural Resources Conservation Service). This project was approved under the authority of the Watershed Protection and Flood Prevention Act (Public Law 566, 83rd Congress, 68 Stat. 666 as further amended). The work plan for this project was approved in 1958 (USSCS 1958), and the project was constructed over the next 25 years. An operation and maintenance agreement was approved on February 12, 1974 (USSCS 1974). The project included the construction of five floodwater-retarding structures and the straightening, shaping, and stabilization of portions of 13 waterways to protect urban areas from flooding. SCWA has additional flood control responsibilities in Zone 1A that are not associated with the Central Sonoma Watershed Project. These include responsibilities along various drainages in and adjacent to the cities of Windsor, Santa Rosa, Rohnert Park, Cotati, and Sebastopol.

Zone 5A encompassed the Russian River from the mouth to the Old Redwood Highway Bridge at Healdsburg. Zone 5A was formed principally to finance construction of local drainage projects within the Vacation Beach area, Forest Hills Subdivision, and Riverlands Subdivision areas. No major flood control works were ever financed in Zone

5A along the lower Russian River. Maintenance work along the lower Russian River consists primarily of periodically removing fallen trees that impede flows when requested by landowners.

SCWA's flood control policies are identified in a series of resolutions adopted by the SCWA Board of Directors. Resolution DR 10073 adopted in July 1964 established that SCWA would only accept responsibility for the maintenance of drainage facilities that satisfy SCWA's adopted standards and specifications, which include flood control design criteria.

These standards and specifications were formally adopted by Resolution DR 17860 in November 1966, and were revised by Resolution 42127 adopted in September 1983. In its operation and management of flood control works, SCWA adheres to numerous contractual agreements, state and federal regulations, the conditions established for each flood control zone as defined in the *Engineers Report for Creation of Benefit Zones* (dated November 26, 1958 and modified by the SCWA Board of Directors resolutions regarding engineering, operation, and maintenance policies), and the conditions defined in the *Agency Report on Benefit Assessments for Flood Control Purposes Within Zones 1A and 2A* (SCWA Maintenance Department 1987-2001).

Overall, SCWA has permissive drainage easements along more than 150 miles of natural waterways in Sonoma County, and has constructed flood control channels in both Flood Control Zones 1A and 5A. Work is done following SCWA standards and specifications as described above, as well as under conditions specified by CDFG (under the Streambed Alteration Agreement, Section 1601 of the Fish and Game Code), the NCRWQCB (under Section 401 of the Clean Water Act, or waste discharge requirements specified in the state Porter-Cologne Act), USACE (under Section 404 of the Clean Water Act), and other permits as may be required. Right-of-ways are either owned in fee or SCWA holds a drainage easement. To perform this work in natural channels, SCWA has individual agreements and access easements with more than 1,100 property owners throughout Sonoma County. These agreements and the flood control design criteria discussed above largely specify the kinds of channel maintenance activities that SCWA performs.

1.4.8 Agreement for Water Supply

On October 24, 1974, SCWA entered into an agreement with the cities of Cotati, Petaluma, Santa Rosa, Rohnert Park, and Sonoma, and the Forestville, North Marin, and Valley of the Moon water districts ("water contractors"). Since 1974, the agreement has been amended eleven times, most recently in 2001. The Eleventh Amended Agreement for Water Supply superseded the Tenth Amended Agreement for Water Supply and Construction of Russian River-Cotati Intertie Project and authorized the implementation of the WSTSP (SCWA 2001a).

The Eleventh Amended Agreement authorizes SCWA to:

1. Construct or acquire additions to the existing transmission system sufficient to meet increased delivery entitlements established by the agreement for the water

contractors and to make the deliveries authorized by the agreement to the Marin Municipal Water District (MMWD);

2. Construct additional Russian River water production facilities up to a total capacity of 168.9 mgd so that the total water production capacity available at all times is not less than the average daily delivery to the regular customers and MMWD (excluding surplus water and water in excess of entitlements) during the month of highest historical use plus 20 mgd;

3. Construct emergency wells with capacities to be determined by the Water Advisory Committee;

4. Construct additional storage facilities (up to a total capacity of 174.3 million gallons) to the extent necessary to maintain a quantity of water in storage equal to 1.5 times the average daily delivery to the regular customers except North Marin Water District during the month of highest historical use; and

5. Replace existing facilities and construct additional facilities, related buildings, and appurtenances as necessary to ensure the reliable and efficient operation of the transmission system and to ensure that the quality of the water delivered complies with all applicable state and federal water quality requirements.

The Eleventh Amended Agreement specifies annual water delivery limits for each water contractor, except the Forestville County Water District.

The additional facilities authorized by the Eleventh Amended Agreement include an aqueduct generally paralleling the Russian River-Cotati Intertie; an aqueduct generally paralleling the south part of the Petaluma Aqueduct from the Russian River-Cotati Intertie to Kastania Reservoir; an aqueduct generally paralleling the Sonoma Aqueduct; an aqueduct connecting the Kawana Springs and Ralphine reservoirs; transmission line pumping plants necessary to regulate flows to storage facilities; 55.5 million gallons of additional tank storage; 56.9 mgd of additional Russian River water production capacity; water-treatment facilities; and additional groundwater wells.

The Eleventh Amended Agreement remains in effect until June 30, 2036, or, if any revenue bonds are outstanding on June 30, 2036, until such date as all revenue bonds shall have been paid in full. The Eleventh Amended Agreement provides that SCWA shall enter into renewal agreements for periods not to exceed 40 years each with any or all of the water contractors requesting the same for water supplies within the delivery capabilities of SCWA's transmission system. This would be at a cost no greater than SCWA's operation and maintenance costs and unreimbursed capital costs allocated on a proportionate use basis.

The Eleventh Amended Agreement also requires the water contractors to implement or use their best efforts to secure the implementation of urban water conservation best management practices (BMPs) as established by the California Urban Water Conservation Council; or implement or use their best efforts to secure the implementation

of alternative water conservation measures that secure at least the same level of water savings.

The water contractors and SCWA must also implement or use their best efforts to secure the implementation of any water conservation requirements that may be added as terms or conditions of SCWA's appropriative water-right permits or licenses, or with which SCWA must comply under any applicable regulation or law.

1.4.8.1 MMWD Agreements

On July 3, 1975 SCWA entered into an agreement with the MMWD, entitled the "Offpeak Water Supply Agreement." This agreement provided for the delivery of water to MMWD not to exceed the annual amount of 4,300 AF, using excess capacity in SCWA's transmission system available during the off-peak months of the year. The water was conveyed to MMWD's distribution system via the North Marin Aqueduct pursuant to a wheeling agreement between MMWD and North Marin Water District that was entered into on September 11, 1974. The Offpeak Water Supply Agreement was amended three times, first in 1984, second in 1988, and thirdly, in 1996, when SCWA entered into a Supplemental Water Supply Agreement with MMWD.

The Third Amended Offpeak Water Supply Agreement increased the total quantity of water subject to a "take or pay" requirement from 2,500 to 4,300 AFY. It extended SCWA's obligation to release water from storage for use by MMWD to include the full year rather than just during the off-peak period. It conformed the agreement to language in Amendment No. 9 to the Agreement for Water Supply and Construction of the Russian River-Cotati Intertie Project that required the Russian River Conservation Charge paid by MMWD be credited to SCWA's Russian River Projects Fund. It added a new Russian River Projects Charge to be paid by MMWD in lieu of Sonoma County property tax money (other than the Warm Springs Dam tax levy proceeds) that is applied by SCWA for maintaining the Russian River water supply.

On October 22, 1991, SCWA entered into another agreement with MMWD entitled the "Agreement for the Sale of Water." This agreement provided for the sale of up to 10,000 AFY of additional water from SCWA to MMWD with maximum delivery rates varying from 9 mgd during May through October to 15 mgd during December through March. This agreement was amended in 1996, when SCWA entered into the Supplemental Water Supply Agreement with MMWD. The amendments added provisions regarding the Russian River Conservation Charge and the Russian River Projects Charge, and provisions for MMWD to make payments to SCWA in return for certain rights to stored water in Lake Mendocino and Lake Sonoma.

1.4.9 RECOVERY PLANNING MOU

In 2001, USACE, NOAA Fisheries, CDFG, and the counties of Humboldt, Mendocino, Sonoma, Marin, San Mateo, Santa Cruz, and Monterey entered into an MOU that established a collaborative process for recovery planning in the North-Central California Coast recovery planning domain. That MOU set forth an approach for local jurisdictions

to support the identification and implementation of recovery goals established by the Technical Recovery Team. Signatories have agreed to participate in the NOAA Fisheries recovery planning process, as described in *Recovery Planning for West Coast Salmon* dated October 1999, and the *Recovery Planning Guidelines* dated September 1992 (NOAA Fisheries 1992). Some of the actions included in this BA would support recovery efforts envisioned by this MOU.

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